

**SP-R13 Recreation Surveys***October 25, 2002***1.0 Introduction/Background**

Recreation surveys are an integral part of recreation studies. Surveys will be used to collect information that addresses objectives of several studies. Existing surveys that have been conducted in the Study Area, as well as other studies of water-related recreation will be reviewed. A list of these studies is included in Attachment A. This information will be used to help determine topics of interest to visitors who participated in previous surveys and guide future survey development efforts. The California Department of Parks and Recreation (DPR) statewide survey, conducted every 5 years, will also be used.

**2.0 Study Objectives**

The objectives of this study are to determine user preferences for facility and area development; perceptions of crowding; levels of satisfaction; reasons for visiting the area; reasons for not visiting the area; and background characteristics. We also intend to provide information for reliable interpretation of long-term traffic data through collection of group-size information.

**3.0 Relationship to Relicensing/Need for the Study**

This study is needed because Federal Energy Regulatory Commission (FERC) regulations require a comprehensive recreation plan. FERC regulations also state that a “well documented user survey is an essential part of a good recreation plan.” (FERC 1996).

The most recent major visitor questionnaire study conducted for the Study Area was the 1996 study conducted by Guthrie et al. (1997). This study examined existing recreation use levels and asked visitors entering controlled access area to complete a brief survey. This survey asked questions about: whether or not the trip was the first visit; specific activities in which visitors participated; lengths of stays; daily expenditures; visitors’ residence locations; satisfaction with existing facilities; and desire for additional facilities and recreation opportunities. The study did not address crowding and carrying capacity issues, nor did it provide or ask for a great deal of detail regarding satisfaction with the respondents’ recreation visits to the Study Area. The other major recreation study relevant to this effort is the DPR study currently under development. This will query visitors at a variety of state parks and state recreation areas (not including the Lake Oroville State Recreation Area) (Study Area). However, the information to be collected is fairly broad and will be more useful for state-level strategic planning, than for assessing preferences about specific management problems or Study Area development scenarios.

This study addresses Issue Statement R1—adequacy of existing project recreation facilities, opportunities, and access to accommodate current use and future demand. It specifically addresses Issues RE 1, 2, 5-39, 53, 55, 56, 60, 61, 64-83, 85, 95, 96, 104, 105, 118-130, 132-145, 147, 150, and 151.

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## 4.0 Study Area

The Study Area includes Lake Oroville SRA, Oroville Wildlife Area (OWA), other lands and waters within and adjacent to (1/4 mile) the FERC project boundary, and adjacent lands, facilities, and areas with a clear project nexus. Specific areas and facilities where questionnaires will be given to visitors include the following:

### ***Campgrounds***

|                                     |   |
|-------------------------------------|---|
| Bidwell Canyon Campground           | Floating Campsites                                |
| Bloomer Cove Boat-In Campsite (BIC) | Lime Saddle Campground                            |
| Bloomer Knoll BIC                   | Lime Saddle Group Campground                      |
| Bloomer Point BIC                   | Loafer Creek Campground                           |
| Bloomer Group BIC                   | Loafer Creek Group Campground                     |
| Craig Saddle BIC                    | Loafer Creek Horse Campground                     |
| Foreman Creek BIC                   | Oroville Wildlife Area (OWA) Camping Areas        |
| Goat Ranch BIC                      | North Thermalito Forebay RV “en route” Campground |

### ***Day Use Areas (DUAs)***

|                              |  |
|------------------------------|--|
| Lake Oroville Visitor Center | Saddle Dam DUA                               |
| Lime Saddle DUA              | North Thermalito Forebay DUA                 |
| Bidwell Canyon DUA           | South Thermalito Forebay DUA                 |
| Loafer Creek DUA             | Thermalito Afterbay access (off Highway 162) |
| Oroville Dam Overlook Area   | Thermalito Afterbay Wilbur Road DUA          |
| Spillway DUA                 | Thermalito Afterbay Larkin Road DUA          |
|                              | Burma Road and Lakeland Boulevard DUA        |
| Riverbend Park               | OWA (including ponds and road network)       |

### ***Boat Launches***

|  |                           |
|--|---------------------------|
| Lime Saddle Boat Launch Area (BLA)     | Foreman Creek Car-Top BLR |
| Loafer Creek BLA                       | Dark Canyon Car-Top BLR   |
| Bidwell Canyon BLA                     | Stringtown Car-Top BLR    |
| Enterprise Boat Launch Ramp (BLR)      | Vinton Gulch Car-Top BLR  |
| Nelson Bar Car-Top BLR                 | Thermalito Afterbay       |
| South Thermalito Forebay               | North Thermalito Forebay  |
| Diversion Pool-Burma Road and RR Grade |                           |
| Riverbend Park launch                  | OWA (3 total)             |

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### ***Other Recreational Facilities with Project Nexus***

|   |   |
|---|---|
| Floating Restrooms                          | Aquatic Center                                  |
| Brad P. Freeman Trail                       | Feather River Hatchery                          |
| Study Area Hiking/Equestrian Trails         | Clay Pit State Vehicular Recreation Area (SVRA) |
| Diversion Pool                              | Model Aircraft Flying Area                      |
| Dispersed use areas along the upstream      | OWA   |
| and downstream reaches of the Feather River | Clay Pit Shooting Area                          |

## **5.0 General Approach**

### **Task 1—Identify Primary Target Groups and Topics**

The Study Plan task force will help identify the primary groups to be targeted for participation in recreation questionnaires. Some of these groups will be targeted because their input is needed to address other studies, such as Study #7—Reservoir Boating Survey. It is likely that these groups (which are not mutually exclusive) will include the following:

- Day use recreational visitors to the Study Area, but not boaters;
- Overnight recreational visitors to the Study Area, but not boaters;
- Recreational visitors who visit the Study Area primarily for reservoir boating;
- Recreational visitors who visit the Study Area primarily for angling and hunting;
- Household survey of residents throughout northern California and northern Nevada (with sufficient sample size representing Butte County to be statistically useful);
- Recreation visitors that recreate at other similar sites in northern California; and
- Local business operators dependent on recreational spending for income.
- The spectrum of trail users and groups

Among the visitors that recreate in the Study Area, there are a total of 19 activities for which data are needed. For most activities, an interviewer will read the questions to participants on-site and record their responses. However, for some activities that occur infrequently questionnaires will be self-administered (interviewers will NOT be present). Self-administered questionnaires will either be left at specific locations (such as the Oroville Nature Center or special-activity access points) or distributed at recreation club meetings. The 19 groups are listed below, by primary season of use.

#### **1. Year round recreation use**

- Anglers at the Afterbay (group 1)
- Anglers at the Forebay (group 2)
- Feather River Anglers (seasonal) and OWA Ponds
- Anglers at Lake Oroville (group 6)
- Trail users (group 3)

#### **2. April to October recreation use**

- Swimmers at the Forebay (4)
- Miscellaneous day use at the Forebay, Afterbay, Diversion Pool, and Lake Oroville (5)

- Campers at the Oroville Wildlife Area (7)
- Campers at drive-in campsites on Lake Oroville (8)
- Picnickers (9)

### 3. Memorial Day through Labor Day

- River boaters below Oroville Dam (10)
- Reservoir boaters (11)
- Campers at boat in and floating campsites (12)
- Swimmers at Lake Oroville (13)
- Swimmers in the Feather River (14)

### 4. Groups that will be surveyed via self-administered questionnaires

- Other Boaters, including kayakers, sail boaters, and water skiers (15)
- Anglers during the off season (Fall, Winter) (16)
- Interpretive/Education visitors (17)
  - Visitor Center, Feather River nature center
- Other Trail users (18)
  - LOBO, OBAB
  - Equestrians (several local, County, and regional organized users)
- Hunters (19)-use concentrated on opening day or opening day weekends, includes hunters for turkey, deer, waterfowl, and upland game)

Table 1 shows the sampling plan and the number of days by season and activity. For those recreation groups for which data are considered insufficient, additional data collection will either occur within this first year study an alternate sampling day, or during the 2003-2004 field season. The sampling plan will allow flexibility to move staff to emphasize data collection within certain groups for which difficulty is encountered in terms of adequate number of completed interviews. Four additional days will be left unscheduled to allow for some “adaptive management” as needed.

**Table 1. Draft Lake Oroville Recreation Surveys Sampling Matrix (with proposed distribution of sampling periods)**

| PRIMARY USE SEASON <sup>a</sup> | USER GROUP <sup>b</sup>             | J 03 <sup>c</sup> | F 03 | M 03 | A 03 | M 02 | J 02                         | J 02 | A 02 | S 02 | O 02 | N 02 | D 02 <sup>c</sup> |
|---------------------------------|-------------------------------------|-------------------|------|------|------|------|------------------------------|------|------|------|------|------|-------------------|
| YEAR ROUND USER GROUPS          | Anglers (AB/FB/LO/FR <sup>d</sup> ) | 2                 | 3    | 4    | 4    |      | Sampled as reservoir boaters |      |      | 4    | 4    | 3    | 2                 |
|                                 | Trail users                         | 2                 | 3    | 3    | 3    | 4    | 3                            | ---  | ---  | 4    | 3    | 3    | 2                 |
| SPRING TO FALL USER             | Swimmers (FB)                       |                   |      |      | 3    | 3    | 3                            | 3    | 3    | 3    | 3    |      |                   |

|  |                                      |  |  |  |  |   |   |                              |   |   |   |   |  |  |  |
|--|--------------------------------------|--|--|--|--|---|---|------------------------------|---|---|---|---|--|--|--|
| GROUPS<br><br>(April thru October)   | Miscellaneous day use (AB/FB/LO)     |  |  |  |  | 4 | 4 | 5                            | 5 | 4 | 4 | 4 |  |  |  |
|  |                                      |  |  |  |  |   |   |                              |   |   |   |   |  |  |  |
|  | Campers (OWA, LO)                    |  |  |  |  | 3 | 3 | 3                            | 3 | 3 | 3 | 3 |  |  |  |
|  | Picnickers                           |  |  |  |  | 3 | 3 | 3                            | 2 | 2 | 3 | 3 |  |  |  |
| SUMMER USER GROUPS<br><br>(Memorial Day Weekend to Labor Day Weekend: 5/25 to 9/2) | River boaters                        |  |  |  |  |   | 1 | 2                            | 2 | 1 | - |   |  |  |  |
|  | Reservoir boaters (FB, AB, LO)       |  |  |  |  |   | 3 | 6                            | 6 | 6 | 3 |   |  |  |  |
|  | Campers (boat-in and floating sites) |  |  |  |  |   |   | Sampled as reservoir boaters |   |   |   |   |  |  |  |
|  | Swimmers (LO, AB, FB, river)         |  |  |  |  |   | 1 | 3                            | 3 | 2 | 1 |   |  |  |  |

The matrix is based on a total sampling budget of 192, 3-hour interview periods (this corresponds to the equivalent of 32 full sampling days x 2 interview periods per day x 3 interviewers). Sampling will in actuality occur on more than 32 individual days during the 12-month sampling frame.

- The task force reached consensus on the primary use seasons for 19 specific recreation activities/user groups.
- AB = Afterbay FB = Forebay LO = Lake Oroville
- No data collection will be scheduled between December 20, 2002 and January 4, 2003.
- Feather River and OWA Anglers will be contacted periodically throughout the year, with emphasis on certain seasons as appropriate.

A list of project-related surveys and visitor studies is included in Attachment A. This list, combined with a review of previous questionnaires, will serve as the basis for developing topics and specific questions for the questionnaires. DPR has requested that several specific questions from the 2002 California State Parks Visitors Survey be included in the SP-R13 survey instrument. Given the complexity of issues, numerous information needs, and the number of major groups to be surveyed, multiple questionnaires will be developed.

#### Task 2—Review Relevant Previous Questionnaires/Coordination with Ongoing Studies

Prior to developing the questionnaires, the research team will review previous and ongoing recreation studies. The team will closely review the work completed by Guthrie et al. (1997), including a review of 900 comments compiled as part of their report. The team also will communicate with the recreation department at Chico State University to determine if other recreation studies have been done, or are planned for the near future. The team will coordinate its efforts with DPR's year-long survey of selected state parks. This survey is expected to start in 2002, and is being coordinated by Laura Westrup in DPR's Sacramento Headquarters. Finally, the team will consult and coordinate with the task leader for the two economic studies (Study #18—Recreation Activity and Spending/Economic Impacts and Study #19—Fiscal Effects) to ensure the appropriate economic information is collected.

#### Task 3—Develop Questionnaire Strategy and Administration

##### ***Questionnaire Survey Strategy***

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Prior to beginning survey administration in May 2002, a number of steps are necessary relative to questionnaire refinement, and field staff hiring and training. Attachment B is a detailed implementation schedule that outlines these steps and the time frames for completing them.

Based on the target user groups identified at the present time, at least four questionnaires will be necessary to adequately assess the attitudes, preferences, and characteristics of the user groups identified. These proposed questionnaires would focus on groups listed under Task 1.

Having separate questionnaires offers several benefits. Separate questionnaires will minimize the time spent administering surveys, will make administration straightforward by avoiding instructions that require respondents to skip questions or entire sections within a questionnaire, and will facilitate reporting and analysis of results for each target group. Each questionnaire is described briefly below.

**Recreation Visitor Questionnaire.** Information will be collected from visitors on-site about a variety of topics specific to activity type. The recreation visitor questionnaire will solicit quantitative, preference, attitudinal, and origin information. If a high refusal rate to complete surveys on-site is encountered, participants may be given the option of completing questionnaires at a later date and mailing them to the research team. This questionnaire will contain sections targeted at specific groups including reservoir boaters, anglers, river recreationists, and trail users.

**Reservoir Boating Section.** This on-site section will solicit quantitative information from reservoir boaters. If a high refusal rate to complete surveys is encountered, participants may be given the option of completing questionnaires at a later date and mailing them to the research team.

**Angler Section.** This on-site section will solicit information from anglers on catch efforts, species caught, species sought, angler satisfaction, and areas fished. If a high refusal rate to complete surveys is encountered, participants may be given the option of completing questionnaires at a later date and mailing them to the research team.

**River Recreation Section.** This section will solicit information from recreationists on portions of the Feather River above and below Oroville Dam about a variety of topics.

**Trail Use Section.** This section will solicit information from trail users.

**Household Resident Questionnaire.** The Household Resident Questionnaire will solicit quantitative information via a mail and telephone survey about local residents' and other Californians' interest in recreation within the Study Area, and various development scenarios that may motivate them to visit the Study Area. This target group will be comprised of four subgroups including:

1. Residents of Butte County
2. Residents of the Sacramento area
3. Residents of the San Francisco Bay Area
4. Residents from other locations within northern California and potentially northern Nevada

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**Recreation at Similar Sites Questionnaire.** This questionnaire will be administered to recreationists on-site at alternate reservoir locations. It will solicit quantitative information from individuals recreating at other reservoirs regarding what attracted them to that area, activities they engaged in, and their willingness to consider visiting the Study Area.

**Recreation-Related Private Business Owner/Operator In-Depth Interview.** This interview will solicit both quantitative and qualitative information from local businesses dependent on recreation expenditures, as well as realtors. This interview will take less than 1 hour for completion. This approach allows much more opportunity for open-ended discussions than the visitor questionnaires. SIC codes will be used to identify types of businesses affected by recreation spending.

### ***Questionnaire Administration***

**Training Field Staff.** A field coordinator will direct all work involving the field crew. He or she will spend the majority of his or her time in the field training and monitoring staff, helping with logistical issues, and occasionally collecting data as needed.

It is anticipated that a field crew of five to seven individuals will be used to support all the recreation field studies. Depending on the results of the pre-testing of questionnaires, it may be necessary to hire bilingual staff. Discussions with DPR managers have indicated that recreational use by Hmong-speaking groups occurs within the Study Area. Responses from this group may be best obtained through a focus group approach, using an interpreter. With regard to other ethnic groups, there also may be a need to conduct interviews in other languages if a significant proportion of those contacted for interviews are unable to communicate in English. Field staff will be trained in data collection protocols in late Winter or early Spring.

**Sampling On-site Questionnaires.** For the on-site questionnaires sampling will occur throughout the year during regularly scheduled intervals. Within a given time interval, visitors at a particular site or area will be contacted on weekdays or weekend days, and those particular weekdays or weekend days will be randomly selected

To ensure that some visitors are contacted during special events some days will be purposefully (not randomly) selected. Sampling will also be stratified to ensure that a sufficient number of respondents from Spring, Summer, Fall, and Winter as well as from weekdays and weekends are selected. This sampling scheme will ensure that visitors from different areas and from different seasons throughout the year will be sampled proportionally to use levels. As stated above, in preparing the sampling schedule, another 4 days will be added as alternates. These days will be used for surveying if other days are canceled due to bad weather or unforeseen circumstances. The proposed sampling schedule is shown in Table 1, and a sample range of completed questionnaires/ interviews and the related error rates are shown in Table 2. Sites surveyed will include campgrounds, day use areas, trailheads, boat launch areas, and marinas within the Study Area, as well as dispersed use areas such as reaches along the Feather River below and above Oroville Dam. Sampling intensity will be determined in advance for each site; however, at undeveloped and low use sites, all visitors may be sampled to ensure an adequate sample size for those areas. A detailed sampling schedule will be prepared and submitted to local operations staff to ensure that there are no conflicts with contacting and surveying visitors at these sites on the days randomly selected. A one-day pre-test of the questionnaires will be conducted in the field prior to full implementation. If problems with clarity or the length of the

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questionnaires are encountered, they will be addressed prior to data collection. Additional questions may need to be added or modified to address study-specific needs.

**Sampling Mailback Questionnaires.** For household residents that will be sent questionnaires via mail, potential respondents will be randomly selected from several different lists. These lists will be generated from county tax records, driver's license information, or local phone books. Each packet will include a cover letter, a copy of the survey, and a stamped return envelope. One week to 10 days after this initial mailing, a postcard reminder will be sent to those individuals who have not returned a survey in order to ensure an adequate sample size and response rate. The anticipated number of completed mailback questionnaires is 400 (Table 2).

**Table 2**  
**Sample Ranges of Completed Surveys and Associated Error Ranges**

| Target Group   | Range of # Completes | Error range                 |
|--|----------------------|-----------------------------|
| 1. Recreation visitors to the Study Area <sup>1</sup>  | 1300 to 2000         | +/- 9% to 2.5% <sup>2</sup> |
| Includes Reservoir Boaters   | 200 to 300           | +/- 6.8% to 5.6%            |
| Includes River Boaters   | 100 to 200           | +/- 9.8% to 6.8%            |
| Includes Anglers   | 200 to 300           | +/- 6.8% to 5.6%            |
| Includes trail users   | 100 to 150           | +/-9.8% to 8.0%             |
| 2. Recreation visitors to similar sites  | 300 to 400           | +/-5.6% to 4.9%             |
| 3. Household survey-northern California<br>Includes residents of Butte County, SF Bay Area, Sacramento, and other areas in northern California/northern Nevada | 300 to 400           | +/- 5.6% to 4.9%            |
| 4. Recreation-related business owners  | 20 to 30             | N/A                         |

<sup>1</sup>

<sup>2</sup> Error rate is intentionally set lower for this group, since there will be additional analyses on smaller subgroups representing different recreation activities.

#### Task 4—Design and Administer the Questionnaires

This task will involve developing the design of the questionnaires to be used in each of the four user group surveys identified above; pre-testing surveys for clarity and conciseness; and administering them in the field. Pre-tests will also reveal whether it is necessary to have questionnaires printed in multiple languages. Questionnaires will be designed according to procedures and guidelines developed by Babbie (1992) and Dillman (1999). The overall intent of these procedures is to ensure questions are asked in a logical sequence, are unbiased, understandable, and relatively easy to answer. Topics that cannot meet these guidelines are more appropriately investigated with other methods

An overview of the topics to be addressed in each questionnaire is given below. The overview is followed by a more detailed explanation of the questionnaire topics.

**#1. Recreation Visitor Questionnaire.** The recreation visitor questionnaire will be administered on-site and will solicit questions in the following areas:



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- Socio-demographic characteristics (age, gender, ethnicity, etc.)
  - Visitors' activities (general and primary)
  - Trip characteristics (group size (measured as either per car/vehicle or per site depending on site specific circumstances, length of trip, number of trips per year, primary and secondary destinations)
  - Crowding and capacity issues (land- and water-related, social carrying capacity)
  - Use and opinion of adequacy/condition of recreation facilities
  - Seasonal use
  - Visitors' areas of residence
  - Types of desired facility or site improvements
  - Types of activities visitors would like to see offered within the Study Area
  - Special events and programs that visitors would like to see offered within the Study Area
  - Perception of recreation-related issues/problems
  - Attitudes toward potential recreation management actions
  - Economic expenditures
  - Previous visits
  - Adequacy of parking for automobiles and boaters

**Reservoir Boating Section.** This section will contain some of the same questions as the recreation visitor questionnaire. It also will assess boaters' attitudes and opinions about other boaters and the project's reservoirs. Boaters' attitudes and opinions will be summarized regarding potential water surface crowding; safety; user conflicts; reservoir conditions; boating regulations; launching and docking facilities; pool levels; and potential management and facility improvements.

**Angler Section.** This section will contain information about the types of project operations and management strategies that may affect optimal fishing locations and the balance of warmwater and coldwater fishing opportunities.

**River Recreation Section.** This section will query individuals using the reaches of the Feather River above and below Oroville Dam on several topics. Visitors will be asked about: use levels, access issues, impacts of project operations on their use levels and satisfaction, effects of improved access on their future use of these reaches, and their economic expenditures.

**Trail Use Section.** This section will query individuals at various trails around the Oroville facilities. Information collected in this section will be evaluated and compared with responses from focus groups. Visitors will be asked about use levels, access, condition of trails, frequency/history of use, and their economic expenditures.

**Other Recreation Groups.** Separate questionnaire sections may be created that will include questions regarding other specific recreation activities of interest such as hunting or camping.. Respondents would only answer questions in the sections that are applicable. These sections would provide an opportunity to obtain information related to the specific traits, issues, and concerns of each of these user groups.

**#2. Similar Recreation Sites Questionnaire.** Visitors at similar sites such as Folsom or Shasta Lakes will be asked to complete this questionnaire. It will solicit on-site quantitative information about the following topics:

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previous visits and related satisfaction levels; intent to return; reasons for visiting the reservoir in question; reasons for not visiting the Study Area; trip characteristics; and visitation patterns relative to comparable facilities.

**#3. Household Questionnaire.** This questionnaire will solicit information via a mailback questionnaire in the following areas: attitudes, perceptions, and characteristics of individuals who have never or only infrequently recreated in the Study Area. The questionnaire will also replicate some of the items in the recreation visitor questionnaire so that data from the two groups can be compared.

The likelihood of visiting the Study Area in response to several different recreation development scenarios will be investigated. The questionnaire will also replicate some of the items in the recreation visitor questionnaire so that data from the two groups can be compared.

**#4. Recreation-Related Private Business Owner/Operator Questionnaire.** The recreation-related private business owner/operator questionnaire will assess the attitudes, perceptions, and opinions of area business owners on issues related to reservoir recreation, operations, and visitors. The objective is to obtain more information on visitors' spending patterns, seasonality of spending, and potential recreation developments that could increase the average expenditure per visitor to the Lake Oroville area. The information obtained from owner/operators and realtors will address the following topic areas:

- Visitor expenditures, by activity if possible
- Occupancy data (where applicable for campgrounds and resorts)
- Socio-demographic characteristics of customers
- Opinion of adequacy and condition of recreation facilities within the Study Area
- Expansion potential/plans for services or facilities
- Opinions of visitors' needs/issues
- General business characteristics (seasonal variation, years in operation)
- Seasonal use

Researchers will conduct interviews with recreation-related business owners in the area, either in person or by phone. A questionnaire form will be developed to elicit business owner responses on a wider variety of recreation-related issues than the other group questionnaires. The survey sample for this particular survey will include selected recreation-related businesses in the Lake Oroville area. These businesses may include, but are not limited to, hotel/motel owners; marina/boating supply store owners; sporting good stores; and general store owners. The target number of completed recreation-related private business owner/operator surveys is 30.

### **Explanation of Survey topics**

An explanation of questionnaire topics and types of questions asked for each is given below. Identifying specific items for questions such as satisfaction with fish and wildlife management, or special events of interest to visitors will be done using focus groups and in-depth interviews with local stakeholders and agency staff.

Reasons for visiting the Study Area- Reasons that visitors recreate at the STUDY AREA, such as convenient location, moor a boat at this location, good fishing, natural beauty, etc.

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Barriers to visiting the Study Area- This section will be directed to individuals who participate in either the Similar sites or the household study who have never visited the Study Area. These individuals will be probed to determine the reasons they have not visited the Study Area.

Economic expenditures- How much visitors spent during their visit to the Lake Oroville area. It also includes out of the area, year round spending for trip-related items such as boat parts or fishing tackle. Study Area

Use and Visitation Patterns- When people visit the recreation area, how many days they stay, the size of their group, seasonal visitation, whether Oroville is their primary destination, awareness of variety and multiple recreation destinations within the Oroville Facilities, and amount of previous visits.

Recreation Activities- What activities people are or intend to participate in during their visit. A range of activities will be included as categories. These categories will include activities such as reservoir boating; river boating; fishing; hunting; use of PWCs; camping; picnicking; hiking; horseback riding and other trail uses. To the extent possible, activity categories and wording of questions will be taken from recent, existing surveys conducted in northern California in order to compare data and develop the regional recreation assessment (Study #14). Visitors will be asked to select one of those activities as their primary activity, to allow for activity based comparisons when reporting study results.

Perceptions of Crowding-How people feel about crowding at various locations (e.g., on the water, in campsites, day use areas, boat launch ramps, parking, roads and access highways), and how they react to it (e.g. go to a less crowded recreation area, visit during low use times of the year).

Aesthetic Quality- How factors such as pool level, project facilities, shoreline vegetation and development influence peoples' perception of the aesthetic quality of the project area.

Satisfaction with visit to the Study Area/with visit to other recreation sites- Typically, when the objective of a study is to compare an area's attractiveness to other recreation areas, a common set of items is asked of visitors who have visited the areas in question. This usually involves asking visitors to evaluate satisfaction with specific items (e.g., cleanliness of the site, adequacy of boat launch ramps, conflicts with other recreation uses), followed by asking them to give an overall satisfaction rating for this particular visit to Study Area and the other recreation area.

Impact of Project Operations- How Lake Oroville and other water body pool levels, shoreline conditions, water surface area, water temperature, and flow rates (for the Feather River only) and affects their use of and satisfaction with bodies of water at the Study Area. These questions also fall into a major category of items that can impact satisfaction with the Study Area.

Perception of Recreation Area and Fish and Wildlife Management Issues- Items that involve recreation area management, and more specifically fish and wildlife management. Both types of management can affect visitor satisfaction.

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Boater Safety- How safe they feel at a particular waterbody, whether or not they have seen or been involved in boating accidents, causes of boating accidents or unsafe conditions perceived and/or observed, and whether or not they perceive boater safety as a management issue that needs to be addressed.

Boating regulations-The extent to which boaters are knowledgeable about regulations, how they feel about regulations, whether or not it affects their satisfaction.

Perception of Adequacy of Recreation Facilities- How visitors feel about the facilities they use, whether they feel upgrades or modifications are needed, and whether they feel additional facilities are needed. Visitors will be asked about a range of facilities, such as boat launch ramps, parking areas, restrooms, picnic tables, and camping areas.

Desired recreation improvements- Importance of a range of recreation improvements. This might include upgrading restrooms, or adding boater safety programs, or adding additional law enforcement staff to a recreation area. Or, may involve more extensive changes, such as building a Native American culture interpretive center.

Desired recreation settings- Visitor preferences for general recreation setting attributes such as the overall level of development, number of other recreationists, amount of on-site management presence. This information will be useful for developing the master recreation plan for the Study Area.

Interest in attending Special Events- The types of special event they might attend or participate in at the Study Area. The event might be an equestrian ride, a mountain bike race, or a bass fishing tournament. The list of special events will be developed in consultation with local stakeholders.

Satisfaction with Fishing- Specific to people who visit the Study Area primarily for fishing. Similar to asking about satisfaction with the Study Area, asking questions about fishing satisfaction involves asking about specific items pertaining to the sport such as, species sought, lake levels, conflicts with other recreationists, and perceptions of fishery management (e.g., balance between coldwater and warmwater species).

Satisfaction with Hunting- Specific to people who visit the Study Area primarily for hunting. Similar to asking about satisfaction with the Study Area, asking questions about hunting satisfaction involves asking about specific items pertaining to the sport such as, species sought, habitat conditions, conflicts with other recreationists, and perceptions of game management (e.g., seasons, limits, restrictions, etc.).

Creel Census- Harvest levels, species of fish caught, whether fish caught were wild or hatchery, and locations fished.

Fishing Regulations- The extent to which anglers are knowledgeable about regulations, how they feel about regulations, and whether or not regulations affect their satisfaction.

Hunting Regulations- The extent to which hunters are knowledgeable about regulations, how they feel about regulations, and whether or not regulations affect their satisfaction.

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Satisfaction with Boating- Items such as time waiting to launch their boats, pool levels, water quality, condition of marinas, floating restrooms/campsites, and conflicts with other recreationists.

Demographic information-Questions about age, income, gender, ethnic background, whether or not the visitor has a disability, and area of residence.

Interest in new recreation activities-Questions of household members only (not on-site visitors) about activities they are interested in participating in, but currently do not. This topic also involves determining what barriers (e.g., lack of money, time skills, recreation areas close to home) prevent people from participating in activities. Focus groups will also examine potential new activities.

Interest in visiting the Study Area- Asked of people that do not or only infrequently visit the Study Area about what types of things (e.g., special events, improved facilities, improved access) could be done to motivate them to visit.

#### Task 5—Analysis of Survey Data

The field coordinator will review completed surveys at a minimum, on a weekly basis, checking for legibility and completeness. He or she will also note any values that appear to be “outliers” (e.g., those values that are unusually high or low numbers) and will ask the interviewer to confirm the accuracy of these data. After this initial QA/QC review, data will be entered and analyzed using an Access database. These data will then be reviewed to ensure consistency in hard copy form values and the resulting database. Completed data files will be examined for outliers. In some analyses outliers may be removed. These data will then be analyzed using SPSS (statistical modeling software) to produce results that can be queried and summarized into major points. SPSS will facilitate in-depth analysis of these data to determine important subsets of recreation visitors (boaters, anglers) and their distinct characteristics and use patterns, including cross-tabulations for selected groups.

#### Task 6—Draft Final Report Preparation

A report of the survey results produced from the analyses in Task 4 will be prepared and will detail results from all of the items in each of the surveys. Detailed results will be provided in tabular and graphical form including tables, charts, graphs, and figures.

Each of these will include statistical information specific to the item including the number of responses, the frequency distribution of responses, and the mean and median where applicable. These graphical products will be part of a report that will summarize the overall findings and identify key issues and important conclusions.

## **6.0 Results and Products/Deliverables**

### ***Results***

For each recreation target group, summary data tables sorted by each survey question will be developed. Descriptive statistics such as the proportion of respondents supporting a new management action, and averages

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will be computed for all questions. Statistical tests (chi-square, ANOVA) will be used to test for meaningful differences between important subgroups of interest.

A few examples of how results will be used are provided below. The results of this study will provide insight into the proportion of visitors who feel crowded, and under what conditions they have such perceptions. This will allow the research team to identify solutions to alleviate crowding (redistribute use, build new facilities). Another way the results could be used is to provide the research team with an understanding of the types of new recreation facilities or programs that might attract new visitors to the Study Area. A final example is that the team will understand how much money is spent in the Oroville area (Butte County) for certain recreational activities. Information obtained from both visitors and local business managers should provide some insights regarding ways to increase visitors' expenditures.

### ***Products/Deliverables***

The following products will be developed for this study:

- Interim Report
- Draft Final Report

Both reports will contain an executive summary; an introduction with goals and objectives; methods; results; and a discussion identifying areas of greatest interest for future recreation development.

## **7.0 Coordination and Implementation Strategy**

### ***Coordination with Other Resource Areas/Studies***

This study will require coordination with Study #7—Reservoir Boating Survey; Study #8—Carrying Capacity; Study #14—Assess Regional Recreation and Barriers to Recreation; Study #17—Recreation Needs Analysis; and Study #18—Recreation Activity and Spending/Economic Impacts.

### ***Issues, Concerns, Comments Tracking and/or Regulatory Compliance Requirements***

This study addresses Issue Statement R1—adequacy of existing project recreation facilities, opportunities, and access to accommodate current use and future demand. It specifically addresses issues RE 1, 2, 5-39, 53, 55, 56, 60, 61, 64-83, 95, 96, 104, 105, 118-130, 132-145, 147, 150, and 151.

## **8.0 Study Schedule**

Data collection: May 2002 through April 2003.

Data analysis and report writing: May through October 2003.

Interim Report due: November 2002.

Draft Final Report due: November 2003.

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## 9.0 References

- Babbie, E. 1992. *The Practice of Social Research*. 6<sup>th</sup> edition. Wadsworth Publishing, Belmont, CA.
- Dillman, D.A. 1999. *Mail and Telephone Surveys: The Total Design Method*. John Wiley and Sons, New York, NY.
- FERC. 1996. *Recreation Development at Licensed Hydropower Projects*. Vol. 12.
- Guthrie, R., D. A. Penland, and E. Seagle. 1997. *Lake Oroville State Recreation Area Recreational Use Study*. Contract report prepared for DWR, Chico State University, Chico, CA.

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## **Attachment A**

### **Existing Information**

1. 1997 DPR Public Opinion on Outdoor Recreation in California
2. 2002 DPR California State Parks Visitors survey (in developmental stage)
3. A Study of Boater Recreation on Lake Berryessa, California
4. Poe Hydroelectric Project Recreation Studies
5. Upper North Fork Feather River Project Recreation Studies
6. Lake Oroville Attendance Figures
7. Study Area Attendance Data summaries (1995-2000)
8. Study Area Recreation Plans
9. DPR and DWR historical recreation plans (Bulletin 117-6)
10. 1997 Chico State University Study by Guthrie et al.
11. Butte Sailing Club turnouts
12. Sailing and Boating Safety Instruction Programs.
13. ORAC notes
14. Trail logs
15. Sonoma State study on equestrian use in Marin County
16. “Enviro Horse” study from the U.S. Forest Service



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## **Attachment B**

### **Implementation Schedule for Field Mobilization**

The following section describes factors to be addressed prior to the 2002-03 field season for researchers and field staff who will collect information at Project sites. Several categories need attention in the next few months such as survey instrumentation, field staff organization, and research materials. Table 1 displays the milestone dates to be met prior to the 2002-03 field season. Meeting these dates is crucial to beginning the field season on time in order to meet future established schedule dates.

Four action items are associated with the survey instrumentation: 1) Completing draft data collection and on-site surveys, 2) pre-testing survey and other data collection instruments, 3) adjusting survey instruments as needed, and 4) printing an appropriate number of survey instruments for the field season. The on-site surveys for visitors (campers and day use area users), boaters, anglers, and river recreationists will need to be completed and pre-tested by the beginning of May 2002.

Two action items are associated with field staff: 1) Hire appropriate field staff, and 2) train them for fieldwork. Field staff will need to be formally hired and available for training by May 1st. This will allow field staff coordinators enough time prior to the sample season to finalize employment details and get enough staff onboard. At least two weeks is needed for training all field staff, as they will need to become knowledgeable about content and administration of at least four surveys and other data collection forms, and the various sites in the Project Area.

Researchers will need an array of materials from clipboards, cellular telephones and laptop computers to watercraft, rental cars, and a field station. Four action items are associated with research materials: 1) Secure two, long-term rental cars to be kept at the field station and used on site, 2) secure watercraft to be available on-call throughout the field season, 3) obtain a variety of clerical materials such as cellular telephones (4), laptop computers for researchers (2), uniforms, nametags, clipboards, field boxes, paper, pens, etc., and 4) secure a field station close the Project where researchers can live and work (cook meals, sleep, use computer work stations, conduct staff meetings, etc.).

The field season begins May 15 to meet scientific sample criteria and scheduling framework.

**Table 1. Implementation Schedule for Pre-Sample Season**

| Action Item                                   | 2002 |   |   |   |   |   |   |   |   |   |   |   |
|---|------|---|---|---|---|---|---|---|---|---|---|---|
|   | J    | F | M | A | M | J | J | A | S | O | N | D |
| <b><i>Survey Instrumentation</i></b>          |      |   |   |   |   |   |   |   |   |   |   |   |
| 1. Complete Draft Data Collection Instruments |      |   |   | X |   |   |   |   |   |   |   |   |
| 2. Pre-test Draft Data Collection Instruments |      |   |   | X |   |   |   |   |   |   |   |   |
| 3. Adjust Draft Data Collection Instruments   |      |   |   | X |   |   |   |   |   |   |   |   |
| 4. Print Final Data Collection Instruments    |      |   |   | X |   |   |   |   |   |   |   |   |
| <b><i>Field staff</i></b>                     |      |   |   |   |   |   |   |   |   |   |   |   |
| 5. Hire Field staff                           |      |   |   |   | X |   |   |   |   |   |   |   |
| 6. Train Field staff                          |      |   |   |   | X |   |   |   |   |   |   |   |
| <b><i>Research Materials</i></b>              |      |   |   |   |   |   |   |   |   |   |   |   |
| 7. Secure Researcher Rental Vehicles          |      |   | X | X |   |   |   |   |   |   |   |   |
| 8. Secure Researcher Watercraft               |      |   | X | X |   |   |   |   |   |   |   |   |
| 9. Obtain Research Clerical Materials         |      |   |   | X |   |   |   |   |   |   |   |   |
| <b><i>Start Field Season</i></b>              |      |   |   |   |   |   |   |   |   |   |   |   |
| 10. Begin Field Season                        |      |   |   |   | X |   |   |   |   |   |   |   |